

WHAT IS CLAIMED IS:

1. An improved rotary die cutting apparatus for cutting a moving web of material into blanks, said apparatus comprising:
  - a pair of carrier cylinders;
  - upper and lower rotary dies removably mounted to said carrier cylinders, at least one of said rotary dies having cutting elements thereon adapted to generate blanks and scrap portions from the moving web of material;
  - gripping elements extending from at least one of said rotary dies, said gripping elements registering with said scrap portions as said rotary dies rotate, said gripping elements sized and positioned so as not to pierce completely through said scrap portions, said gripping elements having the shape of truncated cones having an undercut upper portion; and
  - a stripping knife having a blade edge for contacting the leading edges of said scrap portions as said scrap portions are stripped away from said gripping elements.
2. The apparatus of claim 1 wherein said upper and lower rotary dies have co-acting cutting elements thereon.
3. The apparatus of claim 1 wherein said gripping elements have a top surface that does not extend above said cutting elements.
4. The apparatus of claim 1 wherein one of said rotary dies is provided with support pads in the areas of said die where said scrap portions are generated by the cutting action of said rotary dies.

5. The apparatus of claim 1 and further comprising ejection material mounted on one of said rotary dies adjacent said gripping elements.
6. The apparatus of claim 1 wherein said gripping elements are integrally formed with one of said rotary dies.
7. The apparatus of claim 1 wherein said gripping elements are arranged in a closely spaced grid like pattern of isosceles triangles.
8. The apparatus of claim 7 wherein said gripping elements are approximately equally spaced apart.
9. The apparatus of claim 1 wherein for a web material having a thickness of about .010 inches said gripping elements have a height of about .015 inches.
10. The apparatus of claim 7 wherein said gripping elements are closely spaced together within a range of from about 25 to about 400 gripping elements per square inch.
11. An improved rotary die cutting apparatus for cutting a moving web of material into blanks, said apparatus comprising:  
  
upper and lower rotary dies, at least one of said rotary dies having cutting elements thereon adapted to generate blanks and scrap portions from the moving web of material;

gripping elements extending from at least one of said rotary dies, said gripping elements registering with said scrap portions as said rotary dies rotate, said gripping elements sized and positioned so as not to pierce completely through said scrap portions, said gripping elements arranged in a closely spaced pattern in a range of about 25 to about 400 gripping elements per square inch; and

a stripping knife having a blade edge for contacting the leading edges of said scrap portions as said scrap portions are stripped away from said gripping elements.

12. The apparatus of claim 11 wherein one of said rotary dies forms an anvil cylinder.

13. The apparatus of claim 11 and further comprising a tool carrying cylinder and wherein at least one of said rotary dies is removably mounted to said tool carrying cylinder.

14. The apparatus of claim 13 and further comprising a pair of tool carrying cylinders, and wherein said upper and lower dies are removably mounted to said pair of tool carrying cylinders.

15. The apparatus of claim 11 wherein said gripping elements have a top surface that does not extend above said cutting elements.

16. The apparatus of claim 15 wherein one of said rotary dies is provided with support pads in the areas of said die where said scrap portions are generated by the cutting action of said rotary dies.

17. The apparatus of claim 16 and further comprising ejection material mounted on one of said rotary dies adjacent said gripping elements.

18. The apparatus of claim 17 wherein said gripping elements are integrally formed with one of said rotary dies.

19. A method for removing scrap pieces from blanks cut from a moving web of material in a rotary die cutting operation, comprising the steps of:

advancing the web of material between upper and lower rotary dies having cutting elements on at least one of said rotary dies;

forming blanks and scrap pieces from said web material by cutting the web material with said cutting elements;

gripping said scrap pieces onto gripping elements positioned on one of said rotary dies;  
and

stripping said scrap pieces from said gripping elements with a stripping knife.